Henrique Pires Alves

1) a) $D = \{x \in \mathbb{R} / -2 \leq x < 3\}$

$Im = \{x \in \mathbb{R} / -2 \leq x < 2\}$

b) $D = \{x \in \mathbb{R} / -3 < x < 3\}$

$Im = \{x \in \mathbb{R} / -1 \leq x \leq 3\}$

c) $D = \{x \in \mathbb{R} / -3 < x < 3\}$

$Im = \{x \in \mathbb{R} / -1 \leq x \leq 3\}$

d) $D = \{x \in \mathbb{R} / -3 \leq x \leq 4\}$

$Im = \{x \in \mathbb{R} / -2 < x \leq 3\}$

e) $D = \{x \in \mathbb{R} / -2 < x < 4\}$

$Im = \{x \in \mathbb{R} / -2 < x < 3\}$

f) $D = \{x \in \mathbb{R} / -3 < x < 3\}$

$Im = \{x \in \mathbb{R} / -1 < x < 3\}$

2) $f(x) = 2x + 1 \qquad g(x) = x^2 - 3$

$f(3/2) - g(\sqrt{5})$

$2(3/2) + 1 \rightarrow 3 + 1 \rightarrow 4$

$(\sqrt{5})^2 - 3 \rightarrow 5 - 3 \rightarrow 2$

$f(3/2) - g(\sqrt{5}) \rightarrow 4 - 2 \rightarrow \boxed{2}$

3) $f(x) = \begin{cases} x^2 - 4 & \text{se } x \leq -1 \\ 2x + 1 & \text{se } x > 1 \end{cases}$

$g(x) = \begin{cases} \sqrt{-x} & \text{se } x < 0 \\ x^3 - 1 & \text{se } x \geq 0 \end{cases}$

a) $f(2) + g(-3)$

$f(2) \to 2(2) + 1 \to 4 + 1 \to 5$

$g(-3) \to \sqrt{-(-3)} \to \sqrt{3}$

$f(2) + g(-3) \to \boxed{5 + \sqrt{3}}$

b) $f(2,5) / g(3)$

$f(2,5) \to 2(2,5) + 1 \to 5 + 1 \to 6$

$g(3) \to (3)^3 - 1 \to 27 - 1 \to 26$

$f(2,5) / g(3) \to 6/26 \to \boxed{3/13}$

c) $f(g(1))$

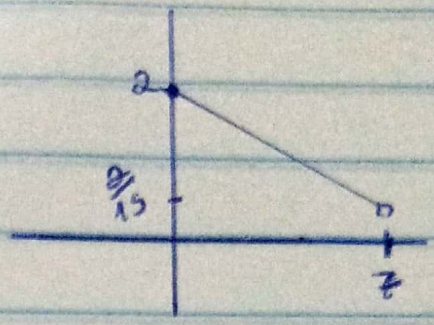
$g(1) \to (1)^3 - 1 \to 1 - 1 \to 0$

$f(0) \to$ NÃO EXISTE

4) $f(x) = \frac{2}{2x+1}$

$f(7) = \frac{2}{2(7)+1} \rightarrow \frac{2}{15}$

$f(0) = \frac{2}{2(0)+1} \rightarrow \frac{2}{1}$



$Im = \{x \in \mathbb{R} / \frac{2}{15} < x \leq 2\}$

5) $P(m \cdot 2 - 3, 2)$

$m \cdot 2 - 3 = 0$

$m = \frac{0+3}{2}$

$m = 3/2$

6) $f(x) = 2x$

$g(x) = 3x + m$

$f(4) + g(-3) = 4$

$f(4) = 2(4) \rightarrow 8$

$g(-3) = 3(-3) + m \rightarrow m - 9$

$8 + (m - 9) = 4$

$m = 4 + 9 - 8$

$m = 5$